



Molecular Property Spectrometer™ MPS™ Flammable Gas Sensor

MPS Flammable Gas Sensor Firmware Version 3.0.2.0 Release Notes

Build 3.0.2.0 has the following improvements and updates:

- Improved chemometric algorithms for handling environmental extremes.
- Sensor reconfigured to output Gas ID = 255 (“Over Range – Concentration greater than 100 %LEL”) when exposed to very high gas concentrations (e.g., 10-100% by volume). Previous versions of firmware could sometimes report a sensor malfunction under such conditions.
- Voltage-supply related faults now latch the fault until the sensor is power cycled and supplied the correct voltage.
- For sensors configured to utilize the “Analog Out” pin, the sensor voltage is used to indicate the level of gas concentration (%LEL). When the sensor detects an error condition, the “Analog Out” pin generates a specific voltage indicating an error, detailed in section 2.2 of the MPS Flammable Gas Sensor User Manual.

MPS Flammable Gas Sensor Firmware Version 3.0.1.0 Release Notes

Build 3.0.1.0 has the following improvements and updates:

- New UART command (SENSOR_INFO) to retrieve sensor-specific information, e.g. serial number, manufacturing date, etc.

MPS Flammable Gas Sensor Firmware Version 3.0.0.0 Release Notes

Build 3.0.0.0 has the following improvements and updates:

- Enhanced chemometrics and bug fixes.
- “Power-On” and “Built-In” Self Tests (POST and BIST) are now enabled. The host system should check the “Status” field in the reply header as well as the “Concentration” in the Answer reply.
- Simplified error status reporting for the UART interface. In the unlikely event that the sensor has multiple concurrent errors, only the highest priority error is reported. The command to retrieve additional error codes (0x0A) is deprecated and no longer available.

MPS Flammable Gas Sensor Firmware Version 2.0.2.0 Release Notes

Build 2.0.2.0 has the following improvements and updates:



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- Significantly reduced average power consumption from 55 mW to 29 mW.
- Enhanced chemometrics
- Bug fixes
- For the UART interface:
 - All integers are now represented in Little Endian format. For processors with Little Endian format, this eliminates the need to swap bytes into native format. This change is **not backward compatible** with clients written against previous firmware releases.
 - A new command (ID 0x09) is available to query “engineering data” for debugging. The size of the data packet “payload” has been significantly reduced in size to 84-128 bytes. The previous command (ID 0x02) is now deprecated.

MPS Flammable Gas Sensor Firmware Version 1.7.3.6 Release Notes

Build 1.7.3.6 has the following improvements and updates:

- Added the ability for the user to select concentration reporting in %VOL or %LEL. The “measure” command is enhanced to include a new 4-bit field that determines whether the answer is %LEL (default), or %VOL. Note that the range for %VOL reporting is from 0 %LEL to 100 %LEL for the gas detected (e.g. 0 %VOL to 5 %VOL for CH₄). Both UART and I2C command sets are modified to handle the new field. %VOL support requires “MPS Sensor Interface” version 1.5.0.6 or higher.
- Fixed a bug in chemometrics that would appear in one rare case.
- Fixed improper handling of an incomplete UART request when the packet header is corrupted.
- Improvements in I2C communications reliability have been added.

MPS Flammable Gas Sensor Firmware Version 1.7.3.1 Release Notes

Build 1.7.3.1 has the following improvements and updates:

- A bug that could cause the Analog Out pin configured to provide a linear voltage output that corresponds to %LEL to malfunction has been corrected.
- The I2C communication protocol option has been improved for the Series 4 MPS Flammable Gas Sensor and it is expected that the Series 4 I2C protocol is compatible with most microcontrollers. The 1.7.2.3 I2C note for Series 7 MPS Flammable gas sensors still applies.

Upgrades to your sensors are highly recommended in order to achieve best performance. Sensors can be upgraded through the MPS Evaluation kit software located at



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<https://www.nevedanano.com/mps-flammable-gas-sensor-support/> or by contacting the factory.

MPS Flammable Gas Sensor Firmware Version 1.7.2.3 Release Notes

Build 1.7.2.3 has the following improvements and updates:

- Gas ID reported in the ANSWER command and Read Flammable Gas ID command is now reported as a number instead of a string in the answer response. The integer to string conversion is documented under the Read Flammable Gas ID command in "12-000003-04 MPS Flammable Sensor Serial Communication Protocol" and "12-000003-03 MPS Flammables I2C Communication Protocol" documents, and can be downloaded at <https://www.nevedanano.com/mps-flammable-gas-sensor-support/>.
- A new version of MPS Sensor interface (v1.5.0.1 or higher) is necessary to communicate with this sensor firmware when using an MPS Flammables Evaluation Kit. The latest MPS Sensor interface is available at <https://www.nevedanano.com/mps-flammable-gas-sensor-support/>.
- A new option for the analog out pin is now available. Instead of reading an analog voltage proportional to the gas concentration measured, the analog out pin can be factory configured to output 3V when the output concentration is nonzero, providing an alarm or interrupt capability for system wake-up or other applications.
- I2C communication protocol option is implemented, but currently compatible with a limited set of microcontrollers. See "12-000003-03 MPS Flammables I2C Communication Protocol" available at <https://www.nevedanano.com/mps-flammable-gas-sensor-support/>. Please contact the factory to check I2C compatibility with your microcontroller.

MPS Flammable Gas Sensor Firmware Version 1.7.1.0 Release Notes

Build 1.7.1.0 has the following improvements and updates:

- Fixed a bug where 100 %vol Methane reported 0 %LEL concentration
- Improved quantification of Methane+gas and Hydrogen+gas mixtures
- Improved performance over environmental range for all gases
- Improved low-LEL sensitivity and accuracy
- Fixed a bug in environmental compensation algorithm that caused potential erroneous readings at 0° C
- Implemented optional analog voltage concentration reading on Analog Out pin